AMENDED CLAIMS

[received by the International Bureau on 03 June 2005 (03.06.05);
Claims 1, 21 and 25 amended,
claims 2-20 and 22-24 unchanged (2 pages)]

1. A surface traversing apparatus adapted to be adhered to a surface by a partial vacuum, the apparatus comprising:

a frame forming a chamber;

a seal having a substantially closed seal perimeter defining an opening of the chamber, the seal perimeter having at least a portion adapted substantially for rolling relative to the chamber and for contact with the surface to be traversed to prevent leakage and maintain a seal with the surface; and

a drive configured to move the apparatus relative to the surface.

2. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at least one roller.

3. The apparatus of claim 2 wherein the at least one roller comprises a compressible outer surface.

4. The apparatus of claim 2 wherein the drive is adapted to power the at least one roller.

5. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at least two rollers.

6. The apparatus of claim 5 wherein the at least two rollers are substantially parallel and disposed on opposing sides of the frame.

7. The apparatus of claim 1 wherein a portion of the seal perimeter comprises a track.

8. The apparatus of claim 7 wherein the track comprises a plurality of contiguous pads.

9. The apparatus of claim 8 wherein at least one pad comprises a flexible sealing element.

10. The apparatus of claim 8 wherein at least one pad comprises a pair of independently compressible flexible sealing elements.

11. The apparatus of claim 7 wherein the drive is adapted to power the track.

12. The apparatus of claim 1 wherein a portion of the seal perimeter comprises two tracks.

13. The apparatus of claim 12 wherein the two tracks are substantially parallel and disposed on opposing sides of the frame.

14. The apparatus of claim 1 further comprising means for maintaining the apparatus in contact with the surface.

15. The apparatus of claim 14 wherein the maintaining means comprises a pressure differential relative to a zone defined at least in part by the seal perimeter.

16. The apparatus of claim 15 wherein the pressure differential is a partial vacuum.

17. The apparatus of claim 1 further comprising a processing apparatus mounted to the frame and adapted to process at least a portion of the surface.

18. The apparatus of claim 1 wherein the seal perimeter comprises a substantially closed polygon.

19. The apparatus of claim 18 wherein the polygon is a quadrilateral.

20. The apparatus of claim 1 further comprising a processor for controlling the apparatus.

21. A surface traversing apparatus adapted to be adhered to a surface by a partial vacuum, the apparatus comprising:

a frame forming a chamber;

a locomoting seal mounted to the frame and adapted substantially for rolling relative to the chamber and for contact with the surface to be traversed to prevent leakage and maintain a seal with the surface; and

a drive configured to move the apparatus relative to the surface.

22. The apparatus of claim 21 wherein the locomoting seal comprises a perimeter, at least a portion of which cooperates with the drive to move the apparatus relative to the surface.

23. A surface traversing apparatus, the apparatus comprising:

a frame;

a seal comprising:

first and second substantially parallel rollers disposed on opposing sides of the frame, wherein the rollers are rotatably connected to the frame;

first and second tracks disposed on additional opposing sides of the frame, wherein the rollers and tracks are adapted substantially for rolling contact with the surface to be traversed and maintaining a seal with the surface; and

a drive configured to move the apparatus relative to the surface.

24. The surface traversing apparatus of claim 23, wherein at least one of the first and second rollers comprises an additional track.

25. A method of traversing a surface, the method comprising the steps of:

providing an apparatus adapted to be adhered to a surface by a partial vacuum, the apparatus comprising:

a frame forming a chamber;

a seal having a substantially closed seal perimeter defining an opening of the chamber, the seal perimeter adapted substantially for rolling relative to the chamber and for contact with the surface to be traversed to prevent leakage and maintain a seal with the surface; and

a drive configured to move the apparatus relative to the surface; and

traversing the surface with the apparatus.